

Intuition in Business: Empirical Base

Eugeniy P. Fomin^a, Andrey A. Alekseev^b, Natalia E. Fomina^c, Marina A. Rensh^d and Ekaterina V. Zaitseva^d

^aSamara State Economic University, Samara, RUSSIA; ^bSt. Petersburg State University of Economics, St. Petersburg, RUSSIA; ^cInstitute for Applied Ecology and Health, St. Petersburg, RUSSIA; ^dRussian State Vocational Pedagogical University, Ekaterinburg, RUSSIA

ABSTRACT

In this article, the authors propose economic projection of the views of Daniel Kahneman on intuition. The authors believe intuition to act as an operative category in entrepreneurship. The results of given statistical experiment prove viability of the phenomenon of intuition when making investment decisions. Two independent mechanisms for investment decisions are being defined - the «rational» and the «intuitive» ones. The research leads to conclusion that entrepreneurs' intuitive decisions possess a relatively high level of efficiency.

KEYWORDS

Management, entrepreneur, investment, intuition, decision-making under uncertainty, risks

ARTICLE HISTORY

Received 20 April 2016
Revised 28 May 2016
Accepted 09 July 2016

Introduction

The idea of this article was prompted by an interesting phenomenon under our observation. In practical work, we often see a situation where entrepreneurs (investors) make decisions that are contrary to the formal business plans. They reject the projects prepared by managers on the basis on academically verified analysis of the market, of the potential of the enterprise, of the business environment. Investors set up decisions contrary to "objective" market trends, decisions based only on intuition, and ... they turn out to be right. We see this as an objective business tool and call it intuition of an entrepreneur. We would like to discuss in this publication some quantitative experimental observations confirming the instrumental consistency of intuition.

Intuition in economics

CORRESPONDENCE Natalia E. Fomina natalia.fomina@mail.ru

© 2016 Fomin et al. Open Access terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>) apply. The license permits unrestricted use, distribution, and reproduction in any medium, on the condition that users give exact credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if they made any changes.

The question of intuition in economics has been remaining a «soft» one. On the one hand, intuition is not denied as an objective reality; on the other hand, it is not projected into an operative category by any theoretical discipline of management. There are no academic rules on how to apply it. Most economists debate about intuition in the manner of "the decision-making under uncertainty", then go to the theory of risks and run into math. It is difficult to agree with this position: decision-making under uncertainty and the use of intuition are two different questions. Intuition of an entrepreneur is an independent question that does not fit into the traditional methodological framework of economic science.

The concept of intuition in the most general terms was taken in a vision of philosopher V. Asmus (1965): intuition is "a direct judgement of the truth, that is a judgement of the objective links between things not based on proof.". Question about the nature of intuition is currently in the focus of research by psychologists, neuroscientists, mystics. Accepting the fact of the phenomenon, academics have different views on its genesis. For instance, psychologist G. Klein (2009) sees its manifestation through "unconscious identity", and a group of Canadian psychologists (Bowers et al., 1990) who studied the nature of the discoveries believe that intuition is "the quintessence of experience." A reputable scholar A. MacIntyre (1984) considers intuition against the background of systematic unpredictability in human affairs through the likely map of the subject's behavior, and the achievement of positive results is identifiable to fortune. And, of course, explanation of academician V.I. Vernadsky (1945) in the framework of the phenomenon of "noosphere" also quite logically lies in the field of hypotheses about the nature of intuition. Some researchers omit the question the nature of intuition, taking it as the operating category, and immediately go on to describe the mechanisms of decision-making based on it: social psychologists A. Dijksterhuis (2006), G. Gigerenzer & D.J. Murray (1987), neuroscientist and neuroscientist G. Roth (1997), J. Lehrer (2009), psychologist J. Kehoe (2008), philosopher H. Bergson (2008), management expert H. Mintzberg (1989), expert on business management practices R. Waterman (1989). In an economic context, there is also an authoritative view of business consultant and writer K.A. Nordström & J. Ridderstråle (2002) on implementing knowledge. In general, there is an objective impression, that despite the lack of proper comprehension of the nature and boundaries of intuition as a category, the scientists insist on its existence and advocate for its use. As R. Waterman (1989) states, intuition is not as mystical as it seems. It allows us to play years of experience without conscious deliberation. Trust your sixth sense. Use your intuition without embarrassment.

At the same time, it can be found that the problem of decision-making is discussed as a balance of rational and irrational by most of the sociologists, psychologists, neurophysiologists, whereas the practical results of the studies resume to cognitive science. Even D. Kahneman & A. Tversky (1984a, 1984b), who was awarded in 2002 Nobel Memorial Prize in Economics for his work in prospect theory, is a professor of psychology at Princeton University. He casts doubt on the postulate of rational behavior of economic entities and claims on individual decisions, which are unbalanced in risk and value in their nature. However, this estimate is quite consistent against the background of institutional views dominating in economic science. But even the initial reading of his works (in particular, "Attention and effort", 1973) reveals experiments,



which can be interpreted as "doubt" in the fundamental economic categories of "value", "utility", "rationality". The arguments on the role of intuition in management and economics in the debate are these taken from psychological and sociological tests. However, having reviewed a number of publications and studies, we have not been able to detect the economic experiments aimed at the consistency of the interpretation of the application of intuition in business decisions. It is in this direction that we propose to develop academic positions of modern science - the formation of quantitative statistical experiments that can prove the consistency of intuition as a category of operating businesses.

Subject of intuition

A starting point of the debate about intuition in economic behavior should be identification of its subject. Unfortunately, most scientists do not focus on this issue, and the psychologist and sociologists probably do not assume any principal differences between economic subjects. Hence calls for the use of intuition are unaddressed.

We believe to be academically correct and principal to distinguish between two groups of economic actors at the micro level (enterprise, organization):

- managers (employees);
- entrepreneurs (investors, business owners).

Most scientists either do not make difference between these subjects (their positions and functions are being mixed), or directly address intuition to the competence of managers. We argue that intuition as operational tool belongs to entrepreneurs only. Let us explain this position.

Managers are employees, motivated with salary. The object of their close attention is the amount of their payment. If this payment is maintained even though financial performance of the investment project is negative, the manager is still in the comfort zone. For example, the results of the study "Intuition in decision-making," conducted by company Reflexivity.ru, led to the conclusion that managers of investment assets of banks and traders in the stock market reject intuition as a tool for decision-making. The survey results and the conclusions drawn by Reflexivity.ru are objective, they are consistent with our position and do not deny intuition as a tool. The sample survey was made on managers who were not entitled to documentary unjustified risk. Such managers do not depend on results of investments, they do need a professionally executed process of asset allocation, approved by the owner. If their actions, which are correct in terms of the job description and tutorials, lead to a negative result, they are still "right." This position is invulnerable from the viewpoint of the role and functions of a professional manager. The manager does not bear the risks and therefore has no right to intuitive solutions. A similar opinion was expressed by S. Avetisyan (2002), director of marketing for Tinkoff company. We can conclude from the interview that the primary point is the intuitive insight of the businessman Oleg Tinkoff, and then managers are supposed to provide rationale for that.

For the manifestation of intuition, one needs to be vitally concerned in the result, to experience deep emotional feelings for equity, to be willing to risk with own funds, and this is not inherent to an employee by definition. In this regard, entrepreneur is opposed to manager. The entrepreneur, as the owner of the capital, the investor, bears the risks of ownership that provides emotional

interest and experience, depth of immersion in the situation. Indeed, it is an emotional concern in the effectiveness of placing own funds that gives the impetus for the manifestation of intuition. A manager can be taught in terms of formal educational process and then integrated into the process chain of the organization. Whereas being an entrepreneur is an art, a talent, a natural propensity to take risks. It was described in the early 20th century by J. Schumpeter & R. Opie (1910), who outlined the entrepreneur as a person with unique, given him by nature, personality traits. This viewpoint has not been contested for a century: in the economic theory, "entrepreneurship" (implying the identity, or personality) is formulated as a "factor of production", "enterprise resource". For instance, C.I. Barnard (1968) sees the economic inefficiency of "formal" organizations, deprived of "intuitive entrepreneur." However, there are other interpretations in the literature, where entrepreneur is treated as an "active agent of influence" on the market, and not an "intuitive party" who adapts to the trend. That is, the entrepreneur does not predict the fluctuations of the external environment only, rather affects it consciously by investment decisions. But we are inclined to take this position only in a situation where investment volumes in possession of a businessman are large enough to change the economic structure of an industry. In all other cases, we consider the behavior of entrepreneurs (investors) as "fit" to the created market, aiming to adjust to the prospective trend. And intuition in this case can be determined as the instrument of long-term vision, as a sense of trends in the industry and the market.

Thus, we believe it correct to explain manifestation of intuition in economics by activities of entrepreneurs, the owners only, and objectivity of consistency of intuitive decisions can be proved by effectiveness of investment decision in relation to own equity.

There is currently no actual need to prove the thesis of the instrumental value of intuition - the fact of awarding Kahneman (1973) the Nobel Prize is a sign of its academic consistency. We would like to see the role of intuition in business, when it is expressed in the microeconomic results, that is, in specific projects. Demonstration of intuition in the economic context will allow to substantiate the thesis:

The entrepreneur has the right to make intuitive investment decision even against the logical corollary of the rational analysis of market information, despite managers' opinions based on formal marketing and economic research of the organization.

Experiments

In this context, we conducted a statistical experiment aimed at evaluating the effectiveness of investment decisions of entrepreneurs at various level of transparency of the market prospects. We have selected 207 investment decisions of entrepreneurs, each of them we could personally observe and quantitatively formalize in the period of 1993-2012. The average level of investment decisions was 2.92 million USD at an average project duration of 2.7 years. Each investment project was viewed through two economic evaluations.

The effectiveness of investment decision ("E" expressed in portions in Figure 1) was considered as a degree of deviation of the net discounted value from the estimated value of the project in the period the asset allocation.



The value of $E = 1.0$ (in total value) means that the net discounted income equals the planned one, a value above 1,0 in the positive zone means exceeded expectations for return of the project

0 - the value of income is below 100% of the planned one.

-1.0 means less than planned by 200%.

The level of information availability of investment decision («I» expressed in portions in Fig. 1) was considered as an expert estimation of information availability in the project.

The value over 1.0 was taken for a situation promising full transparency of the market situation to the investor, such as a preliminary agreement or a signed contract with a potential buyer.

The value 0.75 characterizes "entering the old market with the old product" while maintaining or expanding production volume.

The value 0.5 – entering the old market with a new, modernized (innovative) product. Accordingly, 0.25 means entering the new market with a new (innovative) product.

And, the value of less than 0.2 indicates the uncertain, non-transparent position of the product and the market.

Thus, each investment decision of entrepreneurs can be considered in the plane of cost-effectiveness in an appropriate level of information transparency of the market prospects of the project. The rational interpretation of the distribution of the statistical indicators of the experiment is expected as a linear: the higher the level of awareness of (I) is, the higher the level of efficiency of investment decisions (E) is expected.

And this is exactly the obvious type of formulation that is present in all textbooks on business and investment planning, the same being the basis for principles of due diligence. Contrasting rationality to intuition, we would have to observe the following picture of the statistical distribution: concentration of projects with low information availability ($I < 0.5$) in the zone of negative performance evaluations ($E < 1$) and those with high information availability in the positive zone. But if we accept the existence of intuition as a category of operating economics, we must see that there are effective ($E \geq 1$) investment projects with low ($I < 0.5$) information availability.

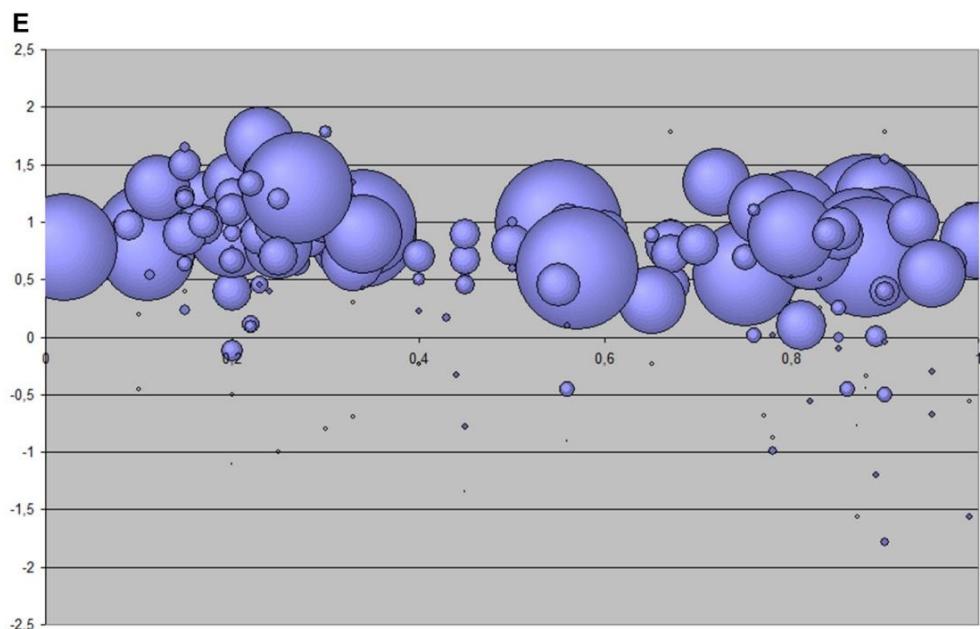


Figure 1. Distribution of investment effects (E, portions) at different levels of information availability (I, portions) and the amount of the investment project (W, relative volume) - the size of the point

The statistical distribution of the investment effects (E) of the 207 projects surveyed in the experiment, all of them under different levels of information availability (I), is shown in Fig. 1. This distribution does not meet the doctrine of rationality: it is enough just to cast a glance to see equal presence of effective projects in the area of high and low information availability projects. Clearly visible are projects, the effectiveness of which was achieved by intuition of the entrepreneur, and there are no other explanations for solvency of investment decision at such a low level of understanding of the prospects and such high risks of entering the new markets with innovative products.

To enter the zone of more rigorous statistical estimates within the research data set we conducted analysis using k-means clustering method, Fig. 2. Clusters are calculated taking into account the weight of each project, which was taken as absolute (given by 2013) investment volume value (W, Fig. 1). The obtained result is completely objective vision of two clusters and their coordinates (Fig. 2):

- Coordinates of the core of the first cluster: $I_1 = 0.801$; $E_1 = 0.775$.
- Coordinates of the core of the second cluster: $I_2 = 0.258$; $E_2 = 0.978$.

We can clearly see two clusters – one with low (1) and another with high (2) information availability of investment decision. Moreover, a cluster with low information availability decisions (which we have every reason to call "intuitive") lies in the relatively high level of efficiency of investments (0.978), unlike the cluster of high information availability (0.775), the "rational" one. That is, the average value of the net discounted income of projects in an intuitive cluster is 0.98 of the planned, and a rational cluster has value of 0.78.

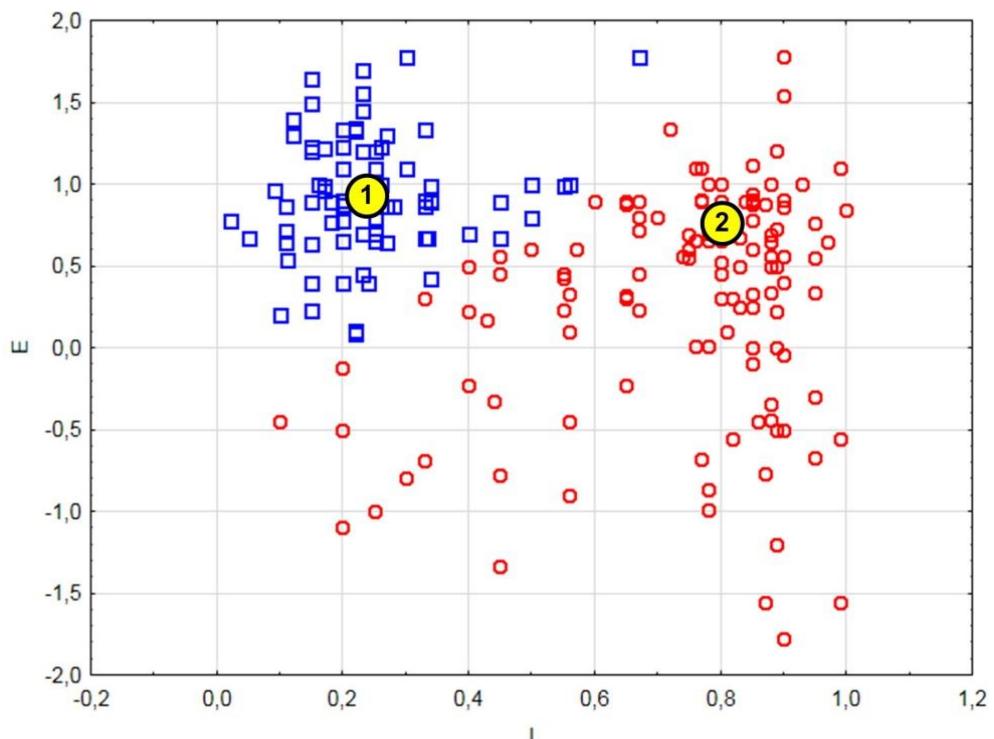


Figure 2. Clusters of the "intuitive" (1) and "rational" (2) decisions by entrepreneurs according to monitoring of the investment effects (E) at various levels of information availability outlook (I).

Conclusion

Using the analysis of the cluster distributions, we can come to the following general conclusions:

Variability of investment outcomes for "rational" decisions (Cluster 2) is very high (from -1.75 to 1.75). Field of Cluster 2 is much wider than that of the first one, an "intuitive." This speaks about very wide variability, uncertainty, risk that accompany the rational approach to investment decision-making at the level of managers.

The core of the Cluster 2 ($E = 0.77$) is lower as to the scale efficacy compared with the cluster of intuitive decisions ($E = 0.97$). That means, we can make a conclusion about relatively large prognostic potential of intuitive decisions of an entrepreneur compared to a rational approach based on information availability to the estimated project.

Decisions of the lowest economic impact are located in the zone of the half-way, ambiguous information ($I = 0.35-0.65$). That is, a partial awareness of the entrepreneur is more likely a "noise" that knocks his prognostic focus.

The vision of two clusters fits quite well position of D. Kahneman (2000) on two decision-making mechanisms. "Psychologists distinguish between a "System 1" and a "System 2," which control our actions. System 1 represents what we may call intuition. It tirelessly provides us with quick impressions, intentions

and feelings. System 2, on the other hand, represents reason, self-control and intelligence". Presented statistical experiment allows to supplement and develop the vision of D. Kahneman (2000) into direction of instrumental nature of entrepreneur's intuition. The experimental results add another word in the feasibility study of intuition as an economic category. The present study allows the authors to formulate a categorical definition from economic position:

Intuition of an entrepreneur is evaluation of prospects of investing capital built on the subconscious feelings and estimates of its owner.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Eugene P. Fomin is Doctor of Economics, Professor of Samara State University of Economics, Samara, Russia.

Andrey Alekseev is Doctor of Economics, Professor of St. Petersburg State University of Economics, St. Petersburg, Russia.

Natalia Fomina is Doctor of Economics, Associate professor, scientific consultant of Institute for Applied Ecology and Health, St. Petersburg, Russia.

Marina A. Rensh is candidate of philosophy science of Russian State Vocational Pedagogical University, Ekaterinburg, Russia.

Ekaterina V. Zaitseva is an applicant for the degree of Candidate of Pedagogy of Russian State Vocational Pedagogical University, Ekaterinburg, Russia.

References

Asmus, V. F. (1965). Problema intuitsii v filosofii i matematike. *Ocherk istorii: XVII nachalo XX*, 1, 48-50.

Barnard, C. I. (1968). *The Functions of the Executive*. Direct access: <http://www.spiegel.de/international/zeitgeist/interview-with-daniel-kahneman-on-the-pitfalls-of-intuition-and-memory-a-834407.html>.

Bergson, H. (2008). *The Creative Mind: An Introduction to Metaphysics, For a Whiteheadian use of Bergsonian intuition*. Frankfurt. Paris: Ontos Verlag, 165 p.

Bowers, K. S., Regher, G., Balthazard & Parker, K. (1990). Intuition in the Context of Discovery. *Cognitive Psychology*, 22(1), 72-110.

Dijksterhuis, A. (2006). On Making the Right Choice: The Deliberation-Without-Attention Effect. *Science*, 311(5763), 1005-1007.

Gerhard, Roth. (1997). *Das Gehirn und seine Wirklichkeit. Kognitive Neurobiologie und ihre philosophischen Konsequenzen*. Berlin: Asmus, 273 p.

Gigerenzer, G. & Murray, D.J. (1987). *Cognition as intuitive statistics*. Hillsdale: Erlbaum, 314 p.

Kahneman, D. & Tversky, A. (1984a). Choices, values and frames. New York: Cambridge University Press and the Russell Sage Foundation, 673-692.

Kahneman, D. & Tversky, A. (1984b). Choices, values and frames. *American Psychologist*, 39, 341-350.

Kahneman, D. (1973). *Attention and effort*. New York: Prentice-Hall, 213 p.

Kahneman, D. (2000). Evaluation by moments: Past and future. In D. Kahneman & A. Tversky (Eds.), *Choices, values and frames*. New York: Cambridge University Press and the Russell Sage Foundation, 693-708.

Kehoe, J. (2008). *Mind Power Into the 21st Century: Techniques to Harness the Astounding Powers of Thought*. New York: Prentice-Hall, 413 p.



Klein, G. (2009). *Streetlights and Shadows. Searching for the Keys to Adaptive Decision-making*. Cambridge, Massachusetts, 239 p.

Lehrer, J. (2009). *How We Decide*. Orlando: Houghton Mifflin, 314 p.

MacIntyre, A. (1984). *After Virtue: A Study in Moral Theory*. University of Notre Dame Press, 355 p.

Mintzberg, H. (1989). *Management: It's not what you think!* London: International edition published by Pearson Education, 521 p.

Nordström, K. A & Ridderstråle, J. (2002). *Funky business: Talent makes capital dance*. Canada: Pearson Education Canada, 256 p.

Schumpeter, J. & Opie, R. (1983). *The theory of economic development: an inquiry into profits, capital, credit, interest, and the business cycle*. New Jersey: Transaction Books, 485 p.

Vernadsky, V. I. (1945). The biosphere and noosphere. *Am Sci.*, 33, 1-12.

Waterman, R. (1989). *The Renewal Factor: How the Best Get and Keep the Competitive Edge*. London: Transworld Publishers Ltd, 312 p.